

FIG.1

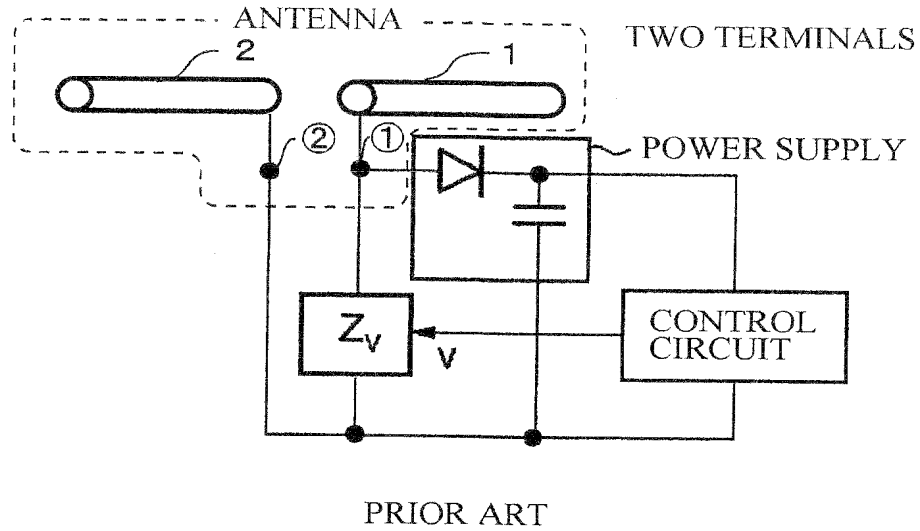


FIG.2

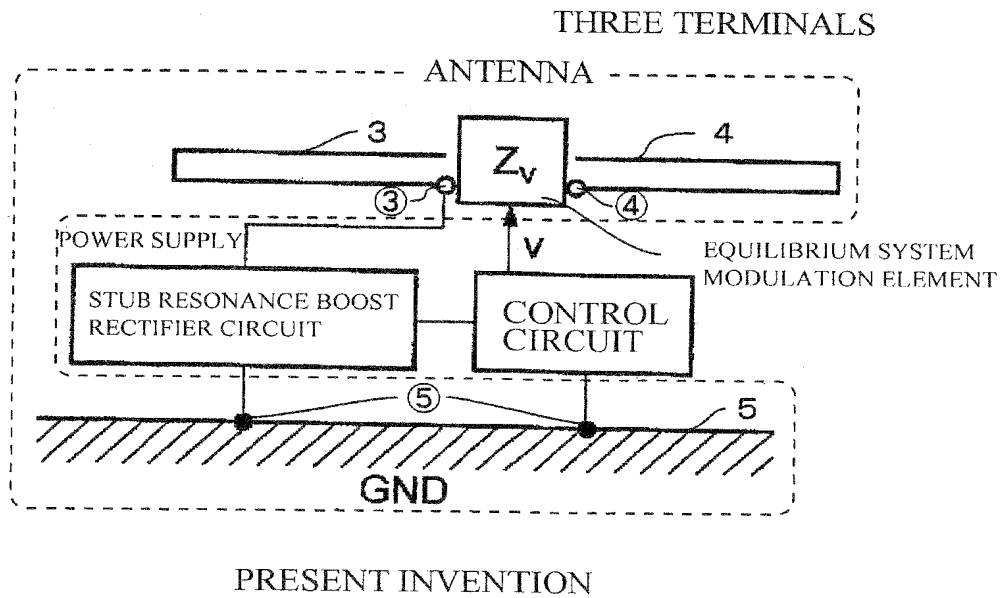


FIG.3

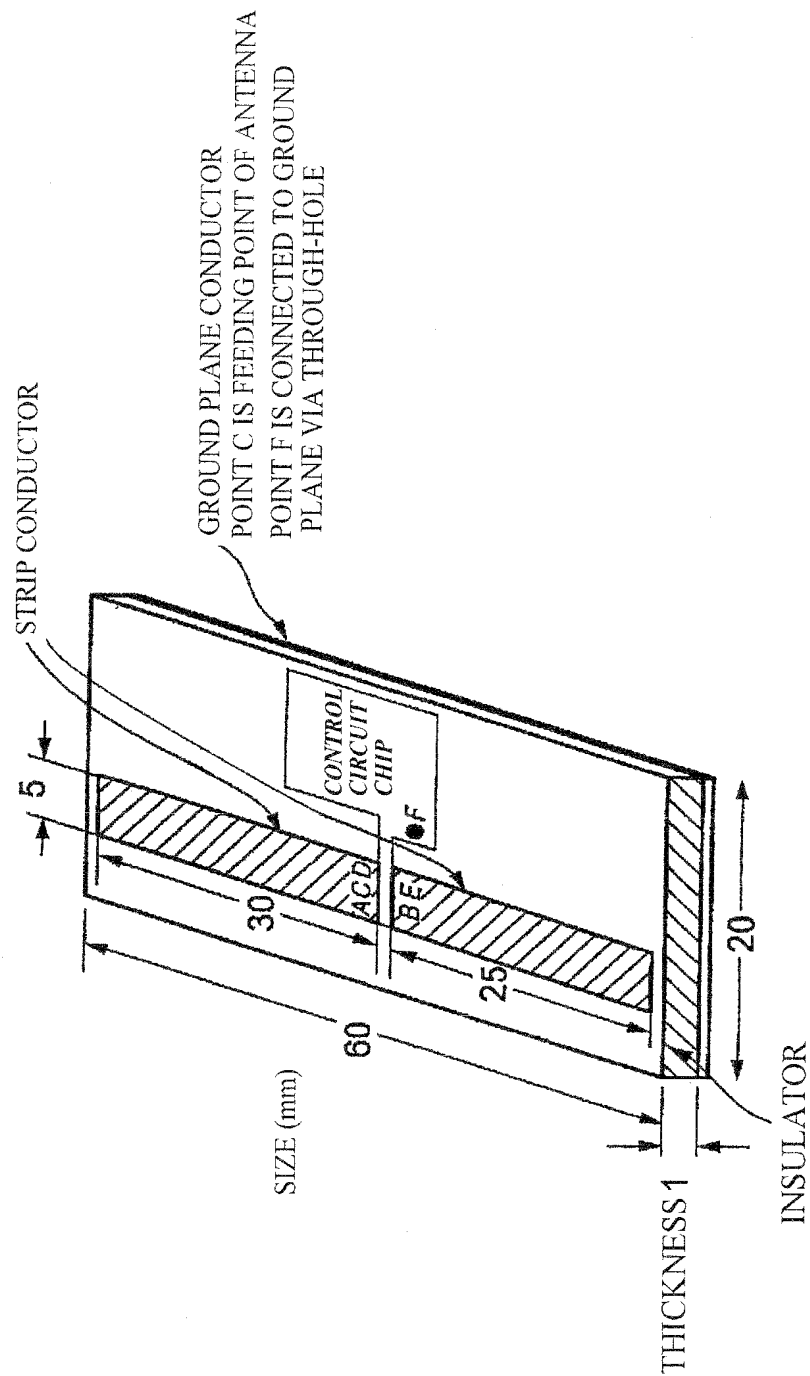


FIG.4

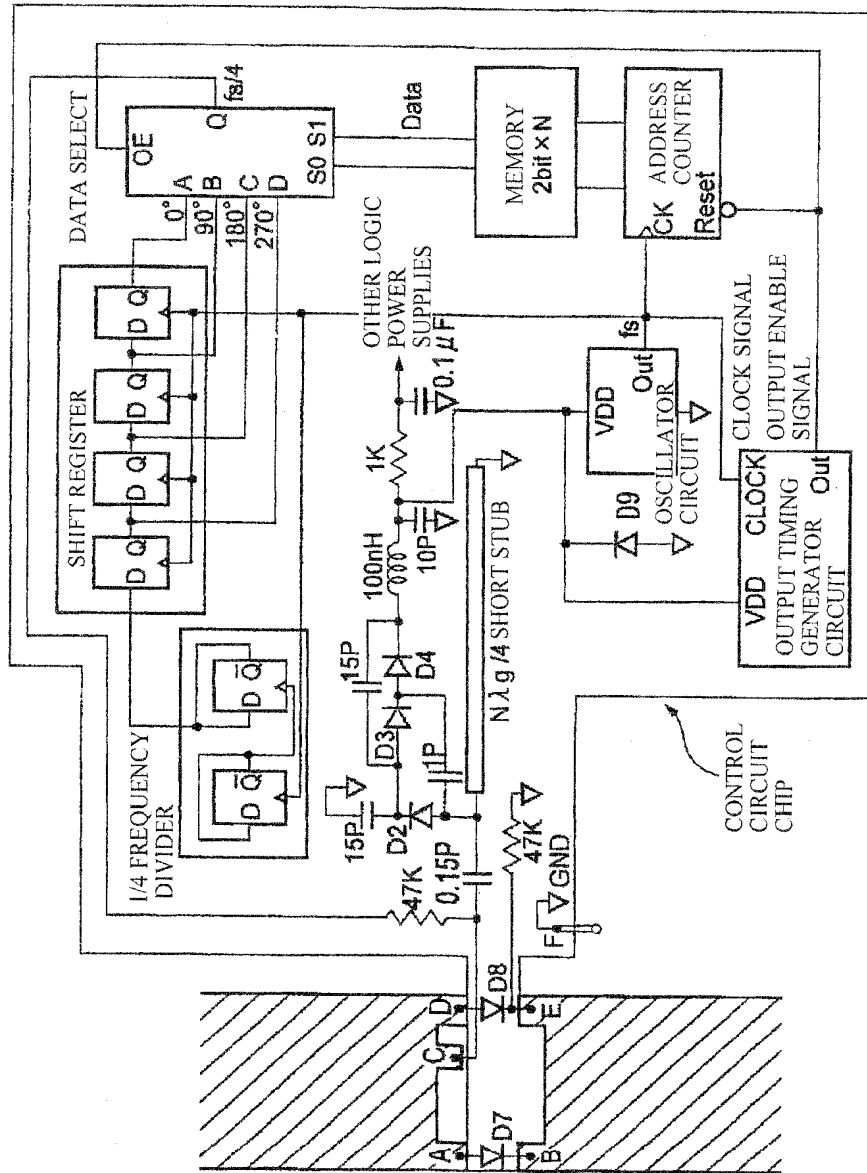
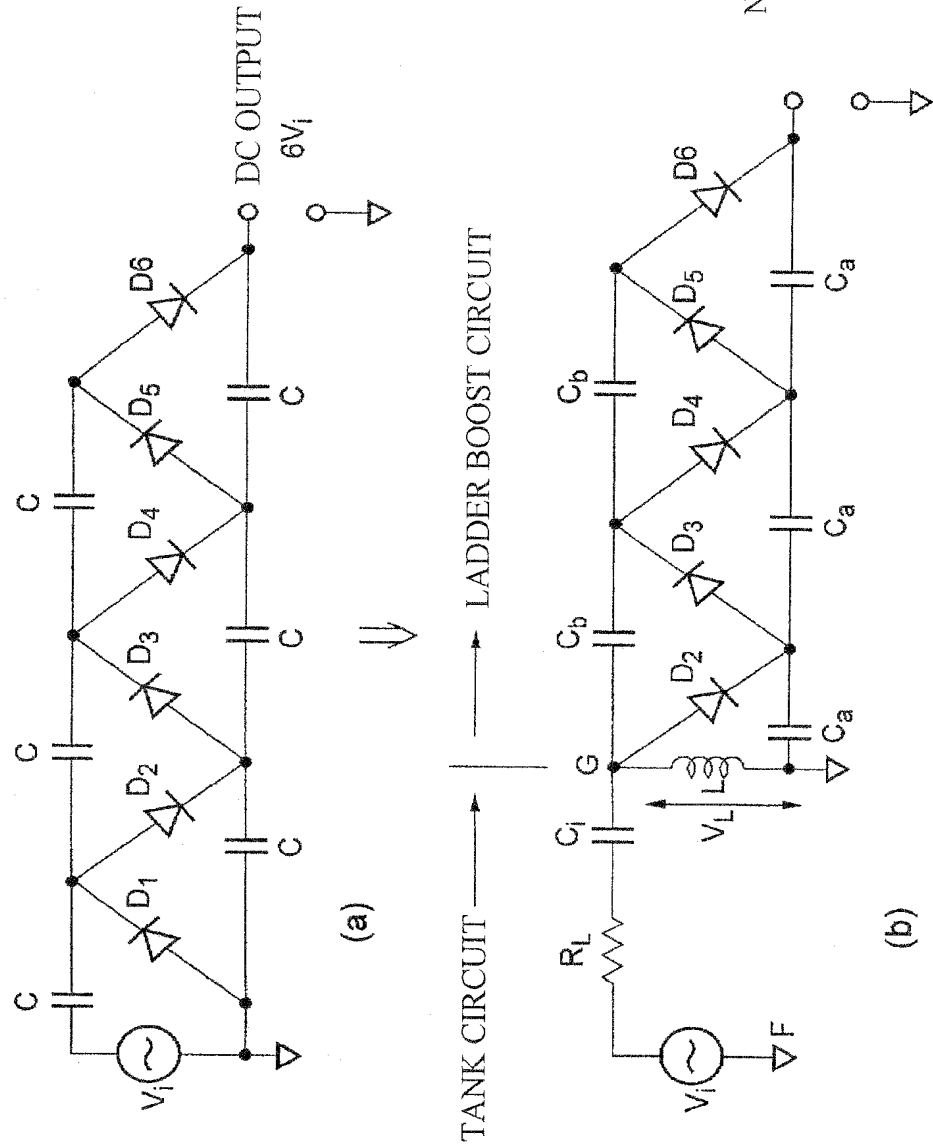
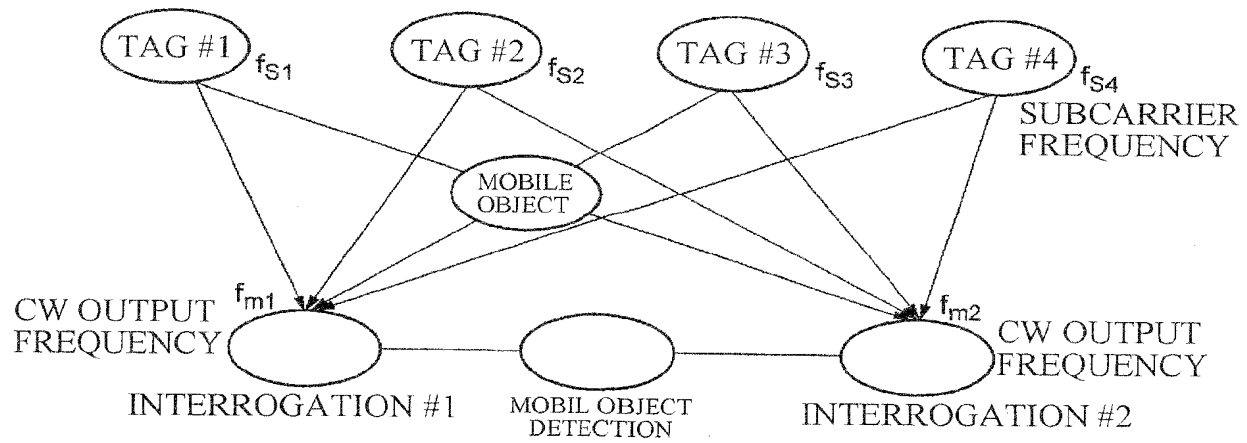


FIG.5



NOTE THAT  $C_a \gg C_b$   
 DC OUTPUT  $\frac{5V_i}{R_L W_0 C_i}$   
 $W_0$  IS RESONANCE  
 ANGULAR FREQUENCY  
 OF TANK CIRCUIT

FIG.6



PRESENCE OR ABSENCE OF TAG RESPONSE SIGNAL

		TAG NUMBER			
		#1	#2	#3	#4
INTERROGATION NUMBER	#1	○	○	×	○
	#2	×	○	○	○

FIG. 7

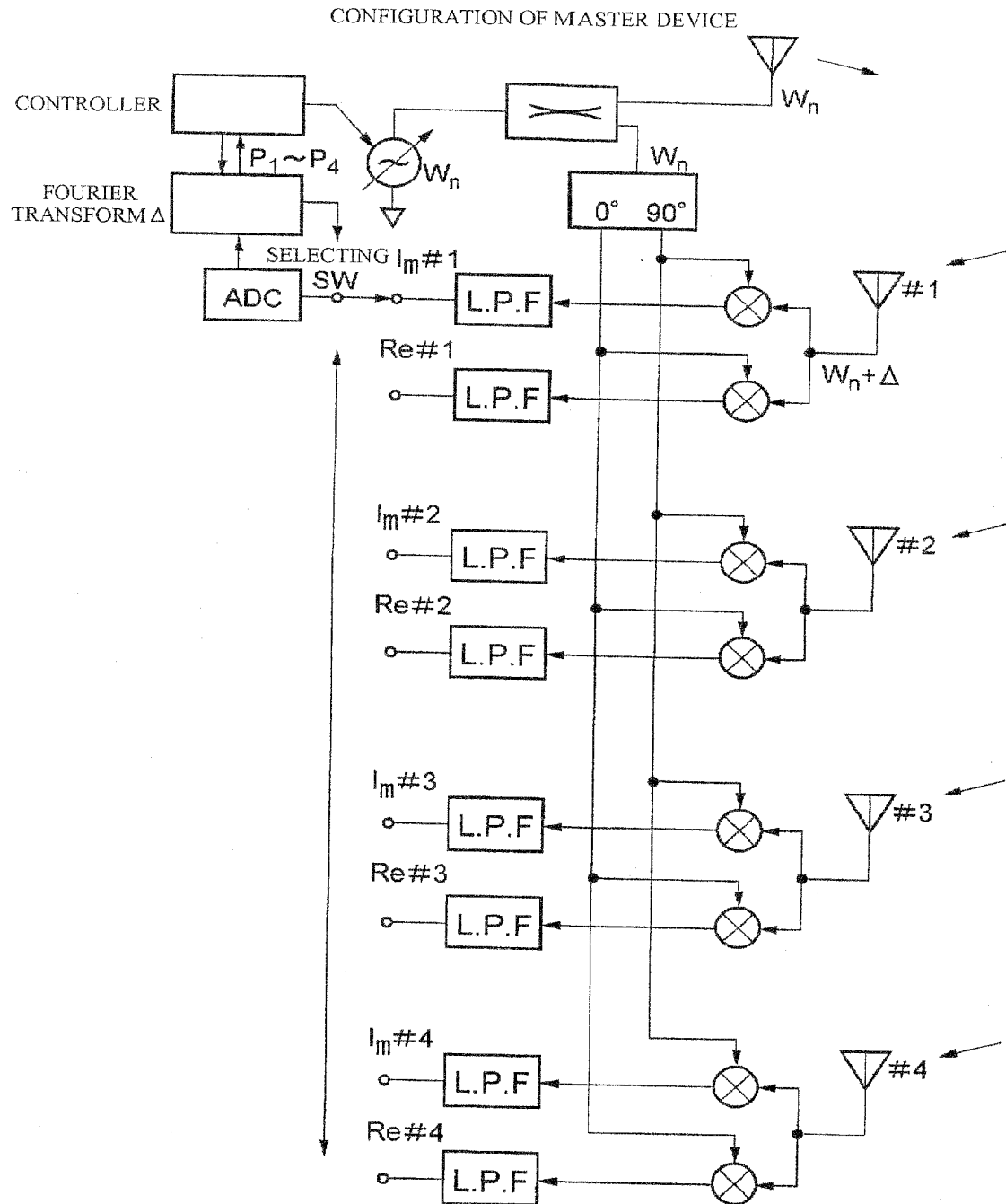


FIG.8

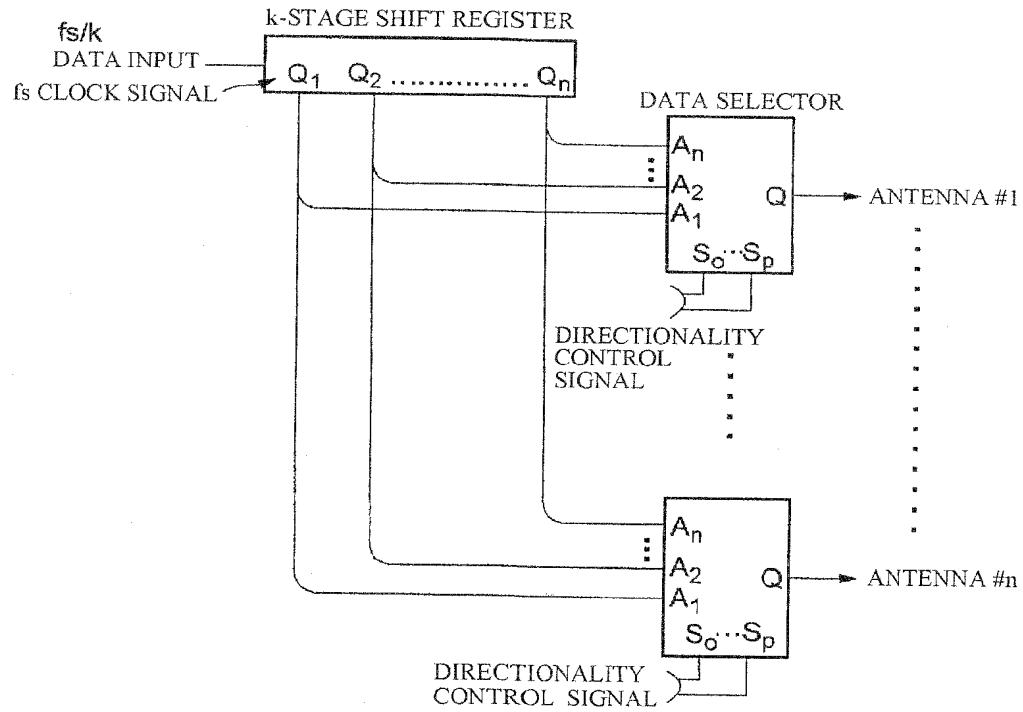


FIG.9

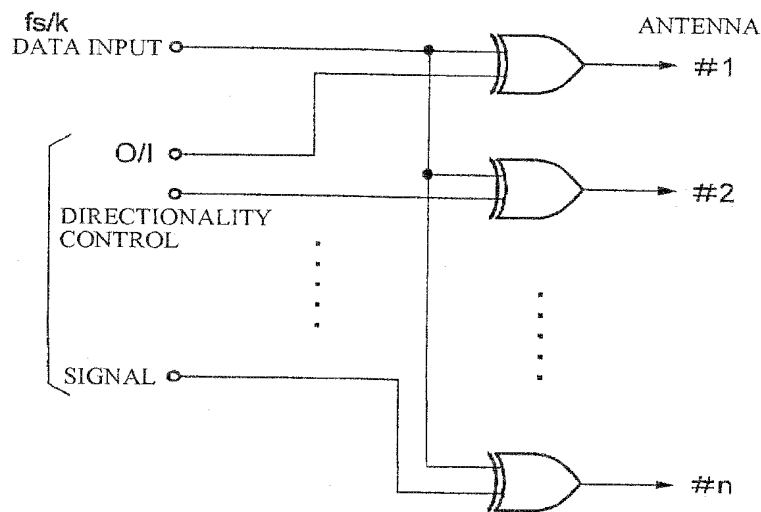


FIG.10

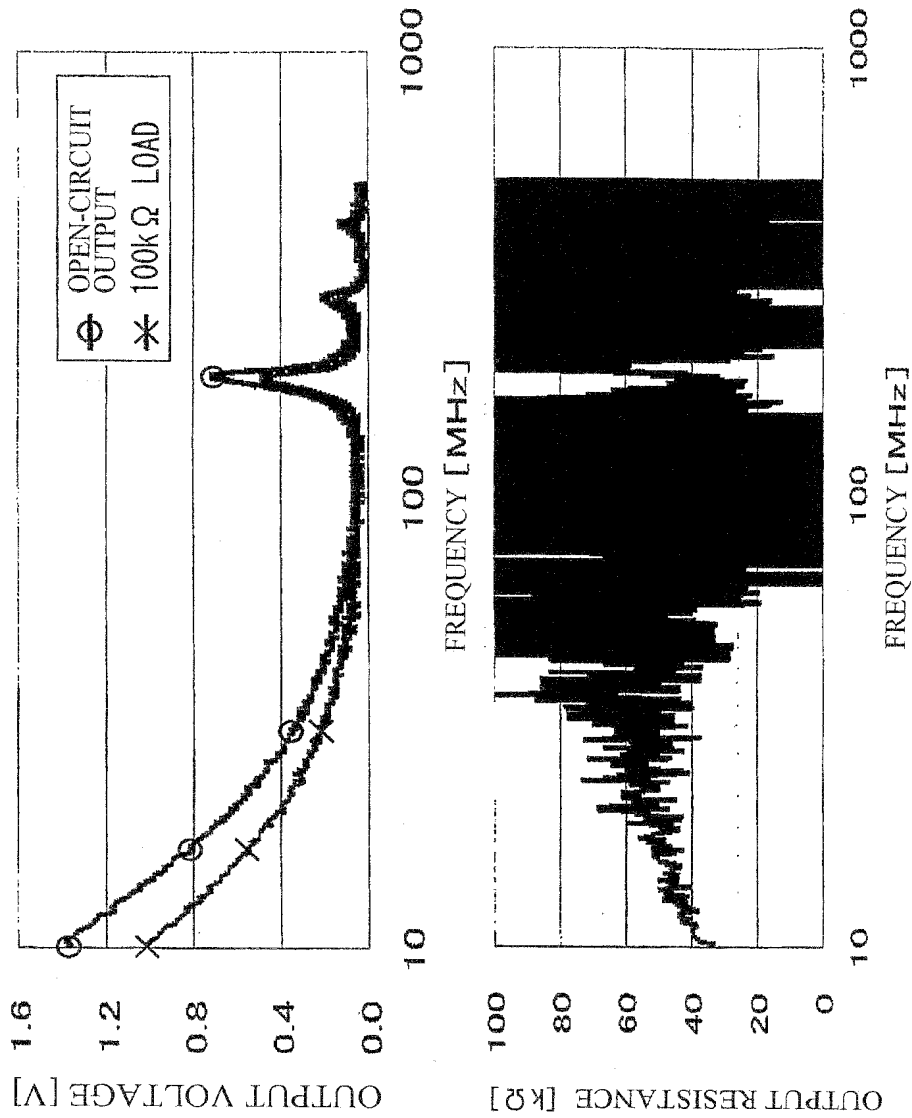




FIG.11

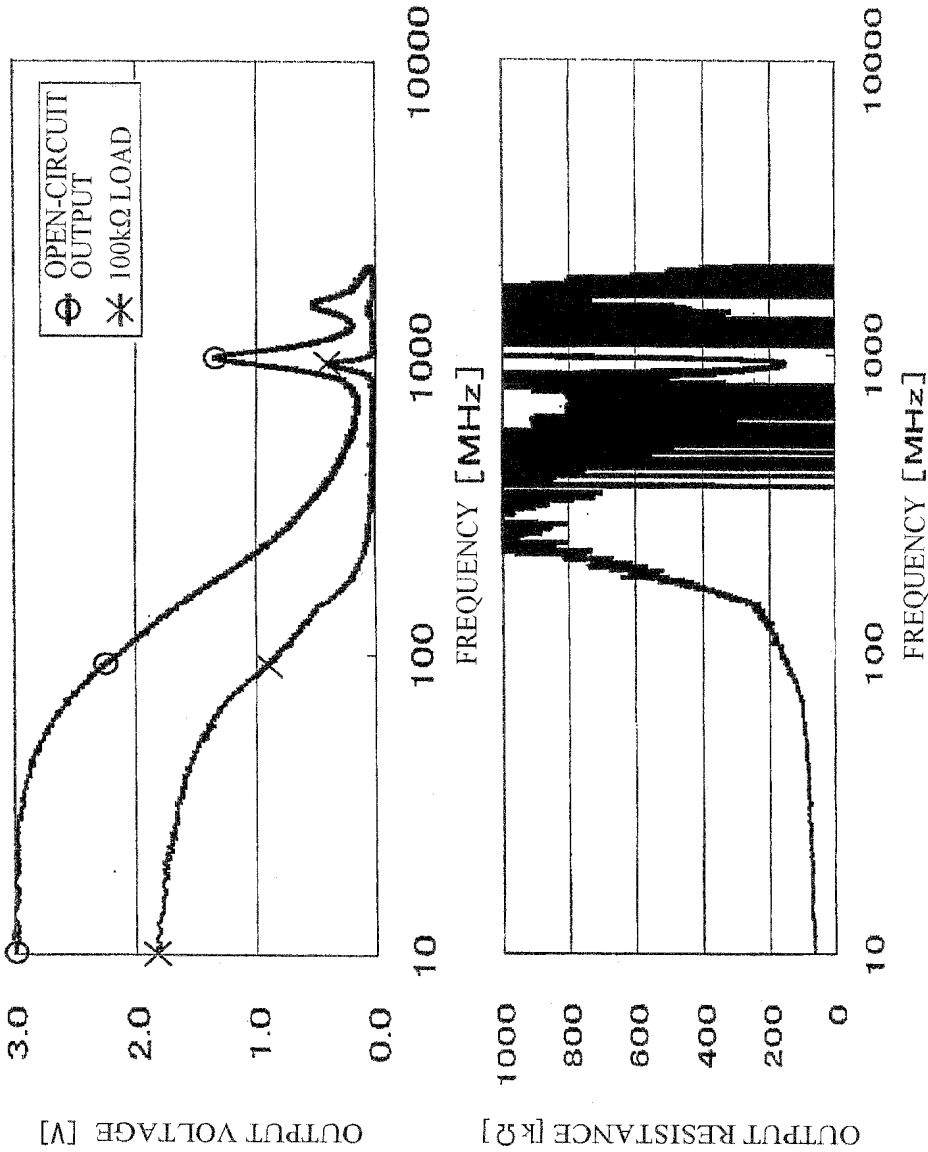


FIG.12

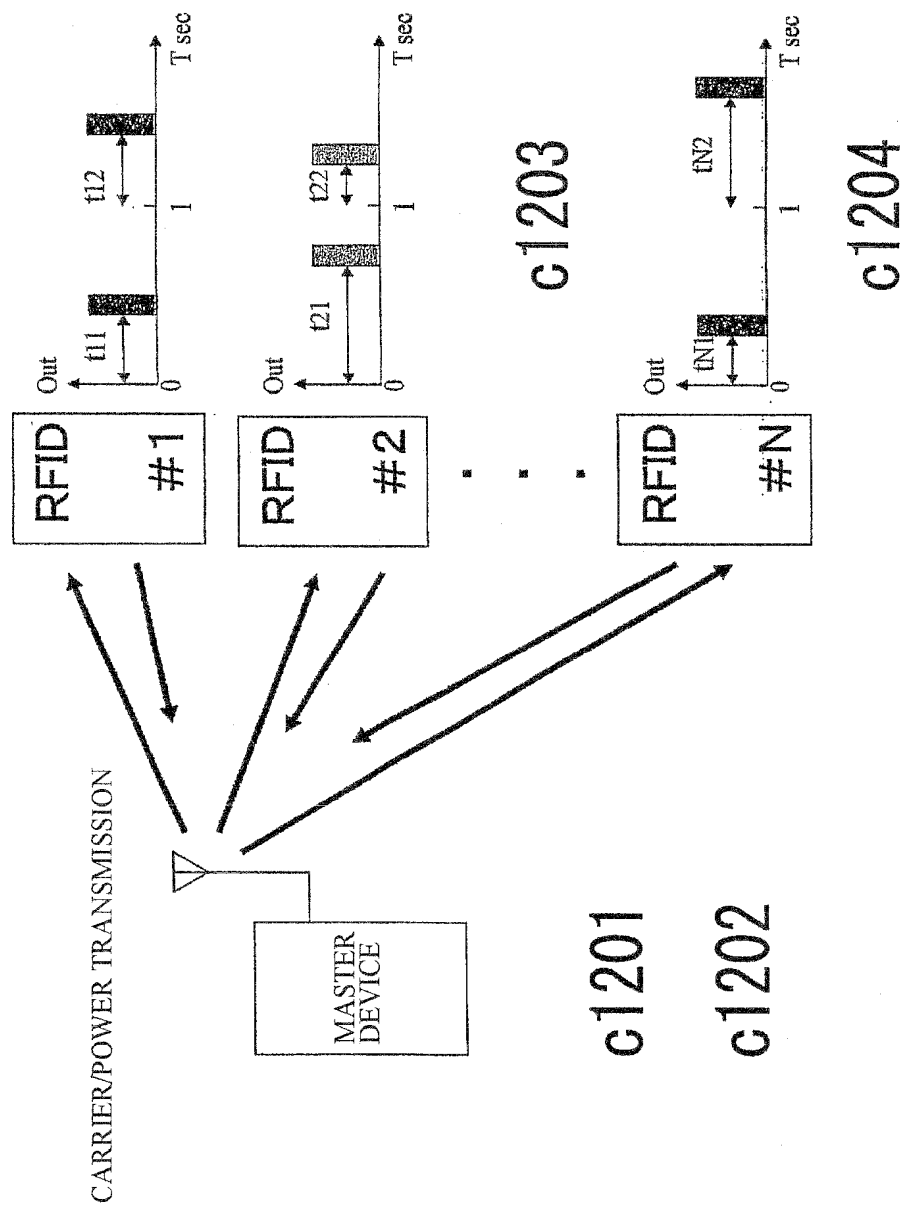


FIG.13

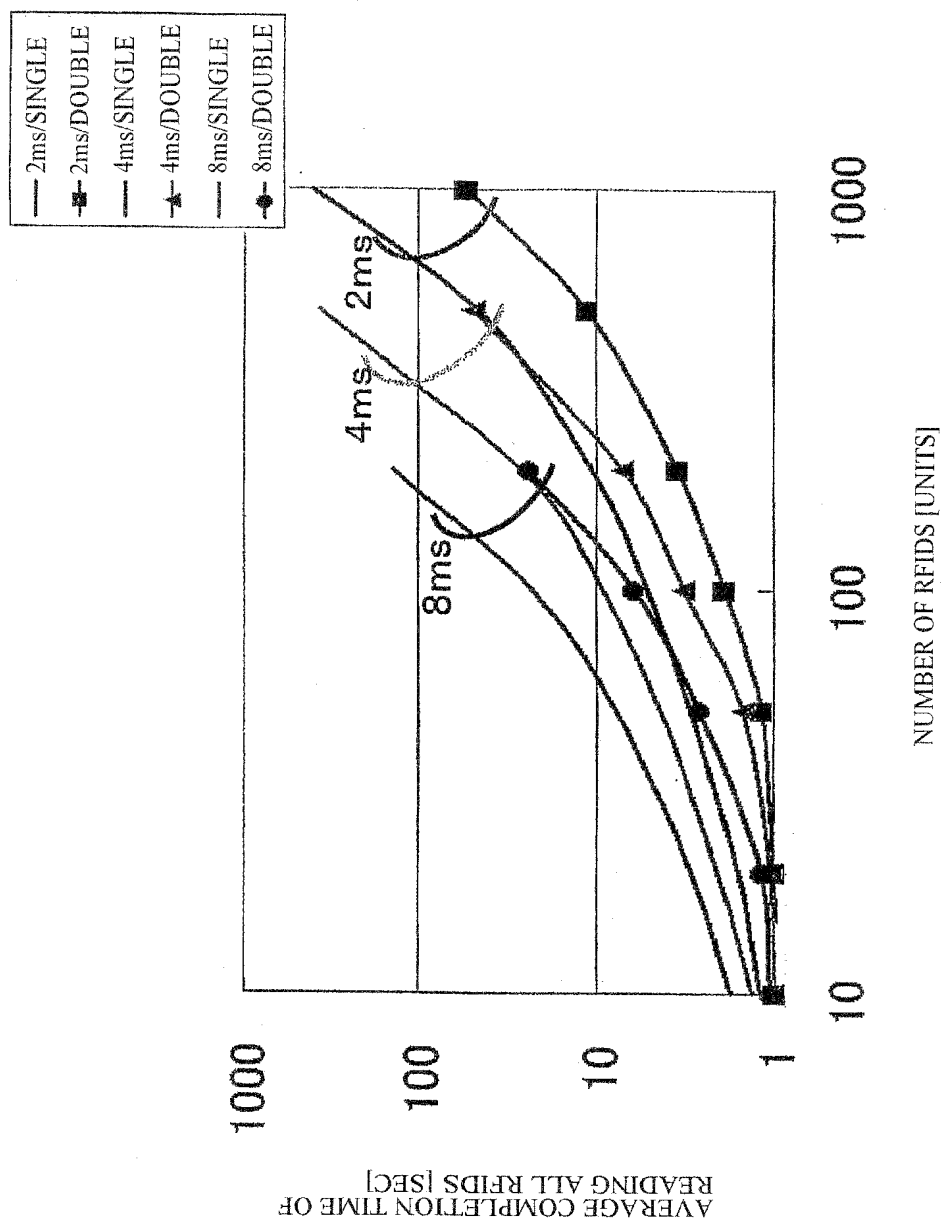


FIG.14

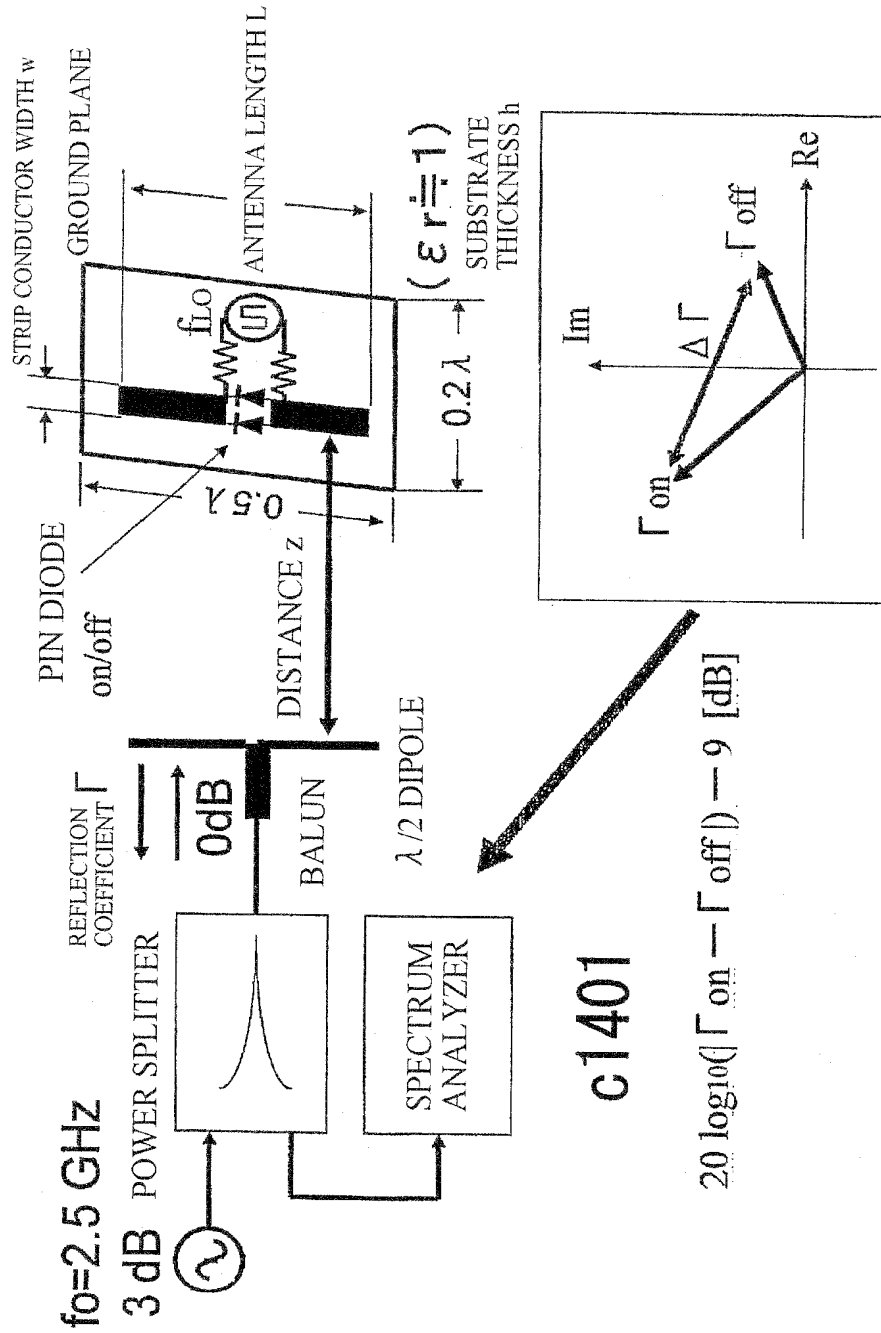


FIG.15

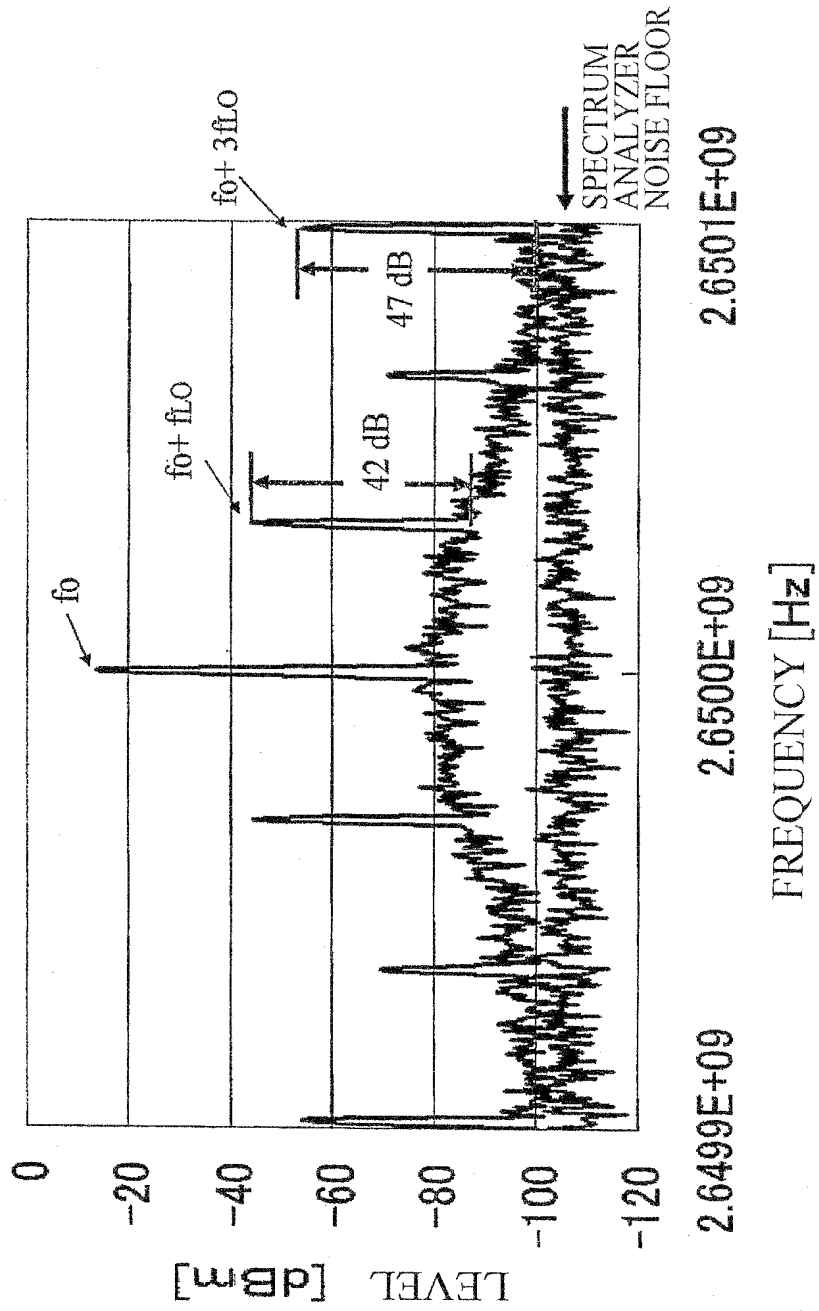


FIG.16

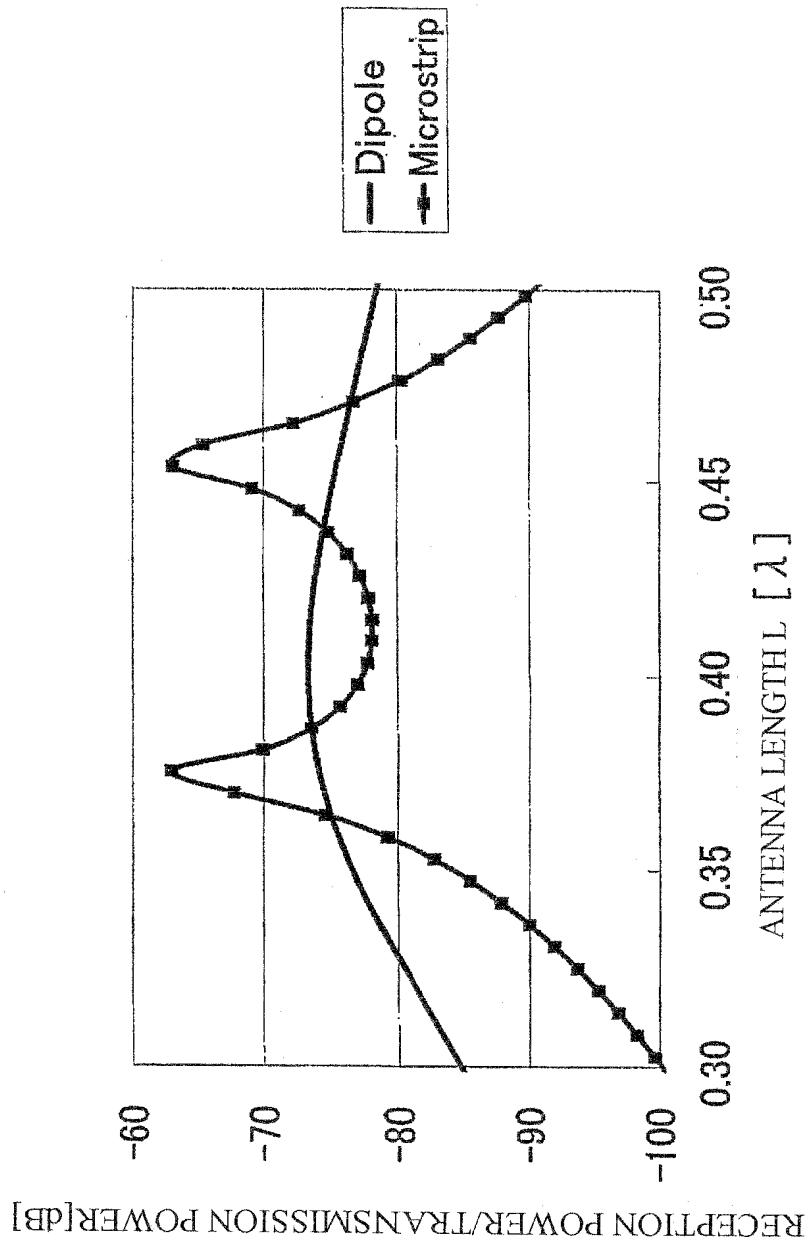


FIG.17

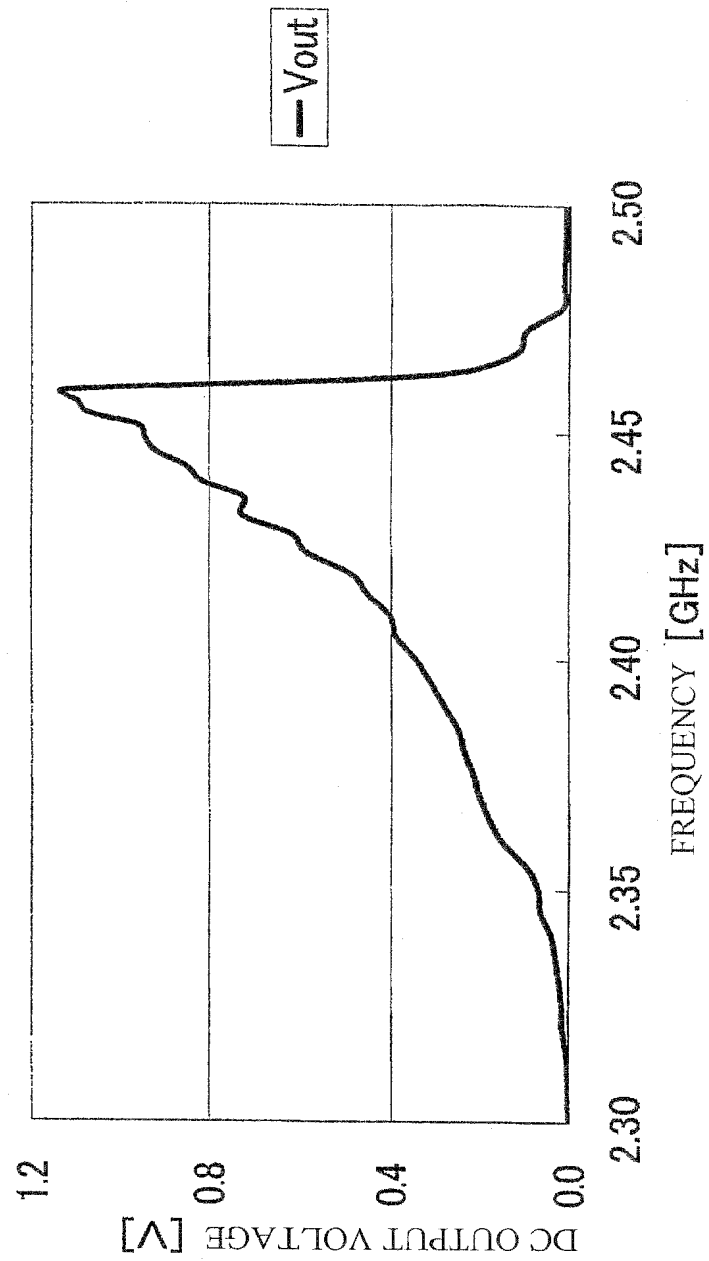


FIG.18

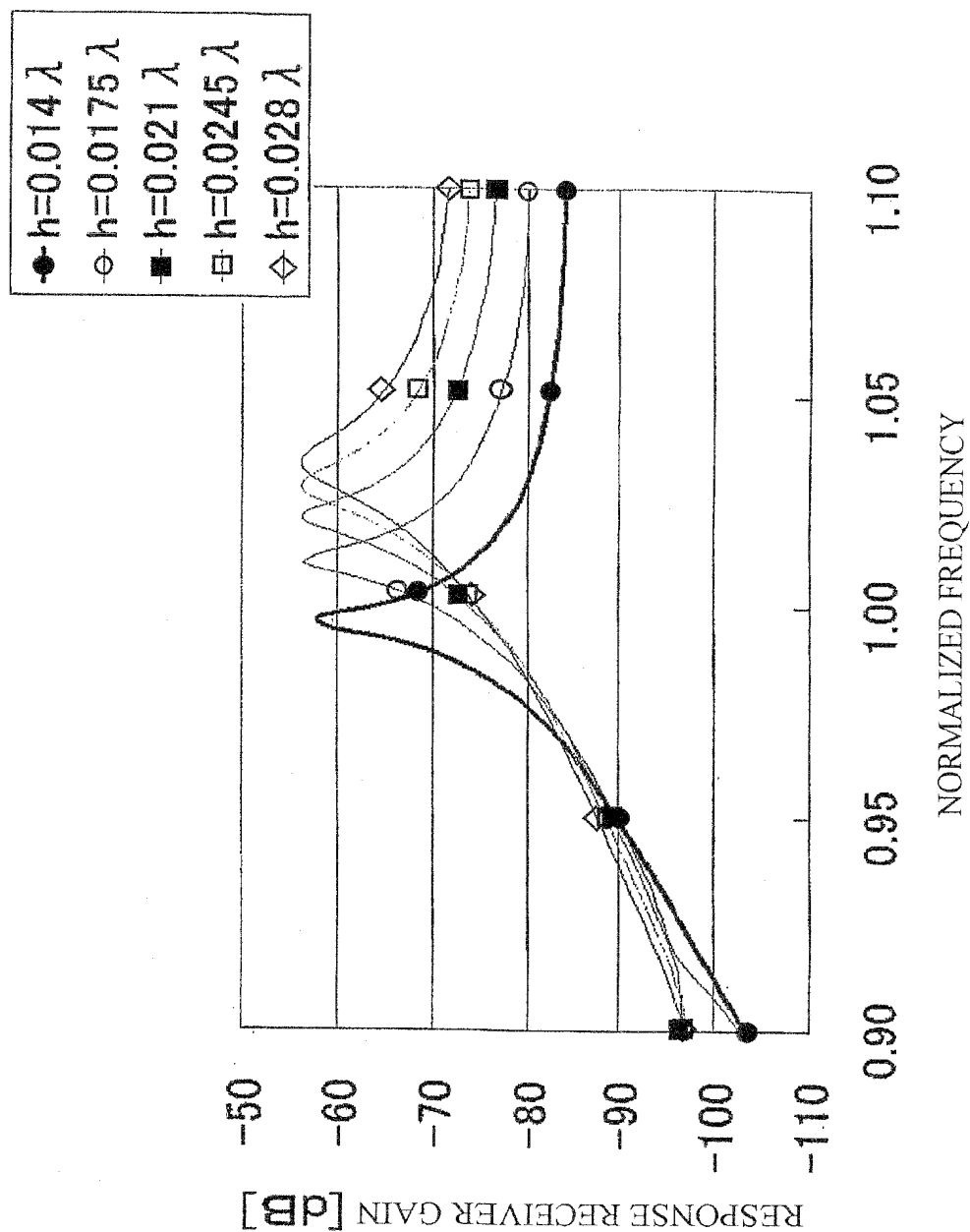




FIG.19

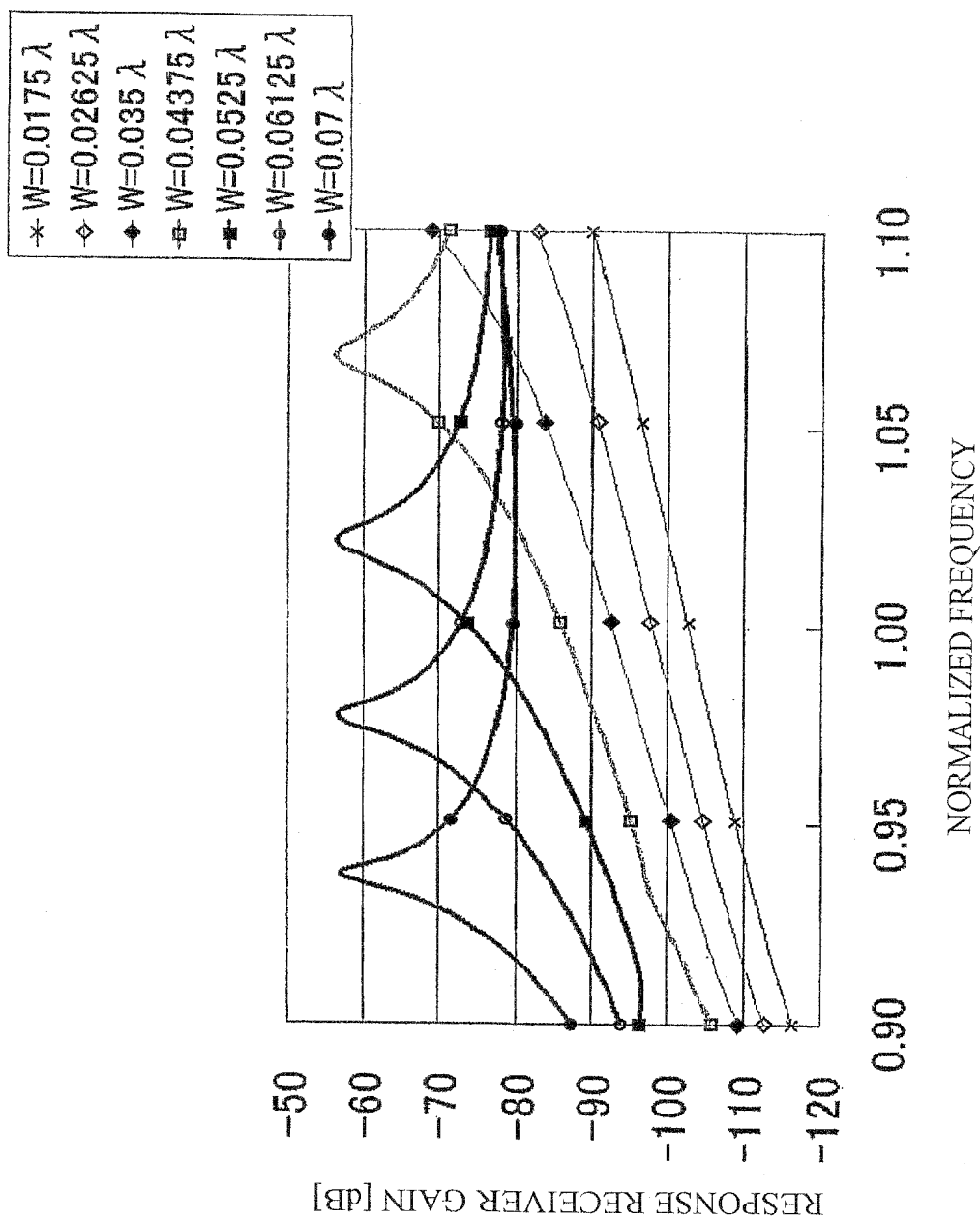


FIG.20

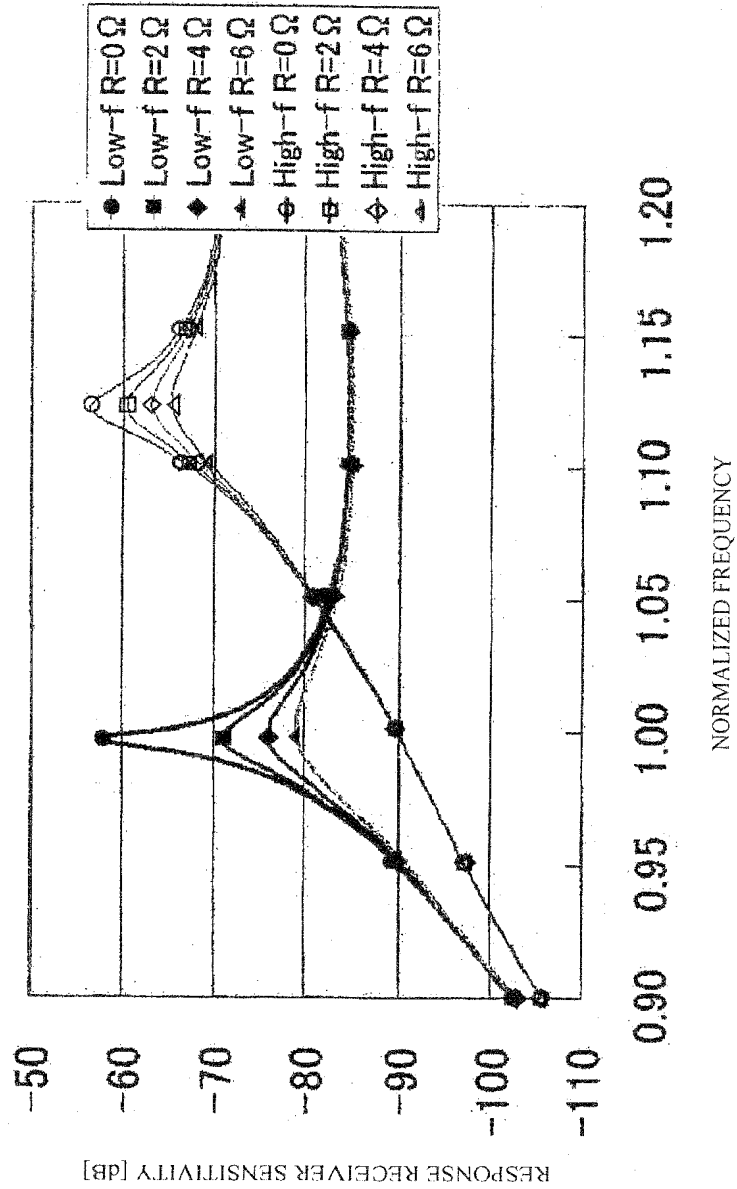


FIG.21

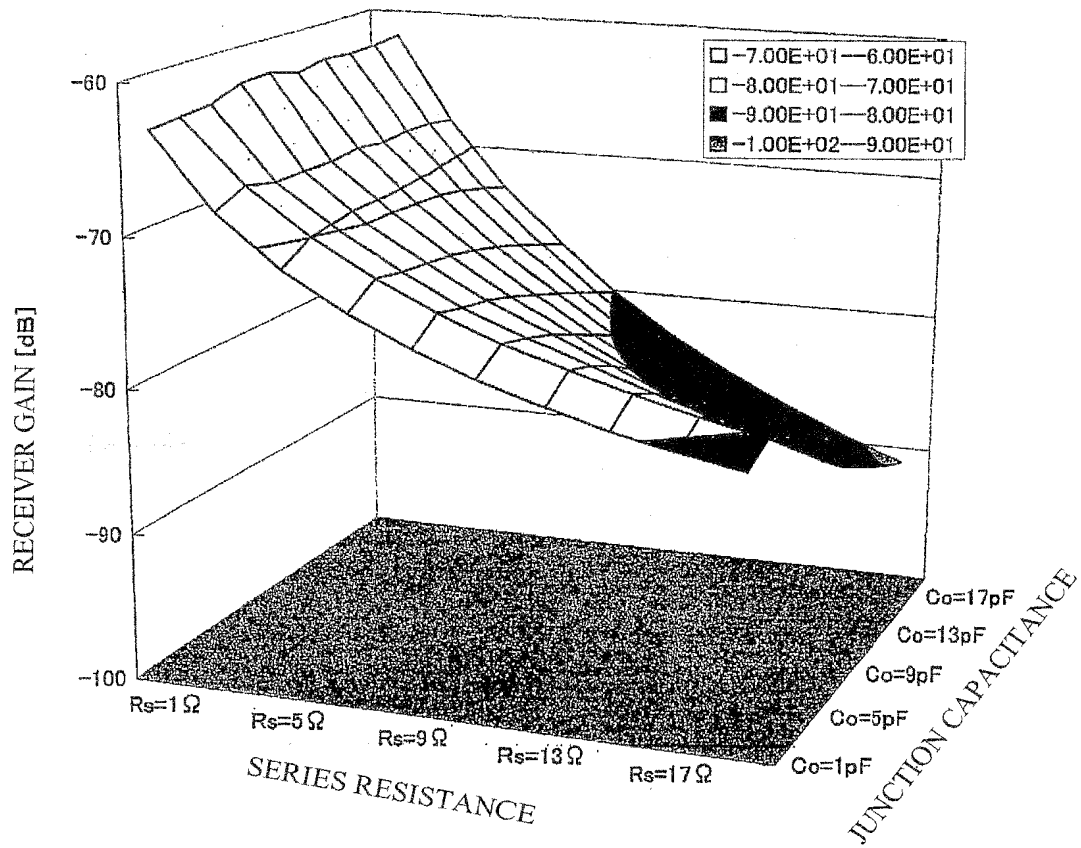
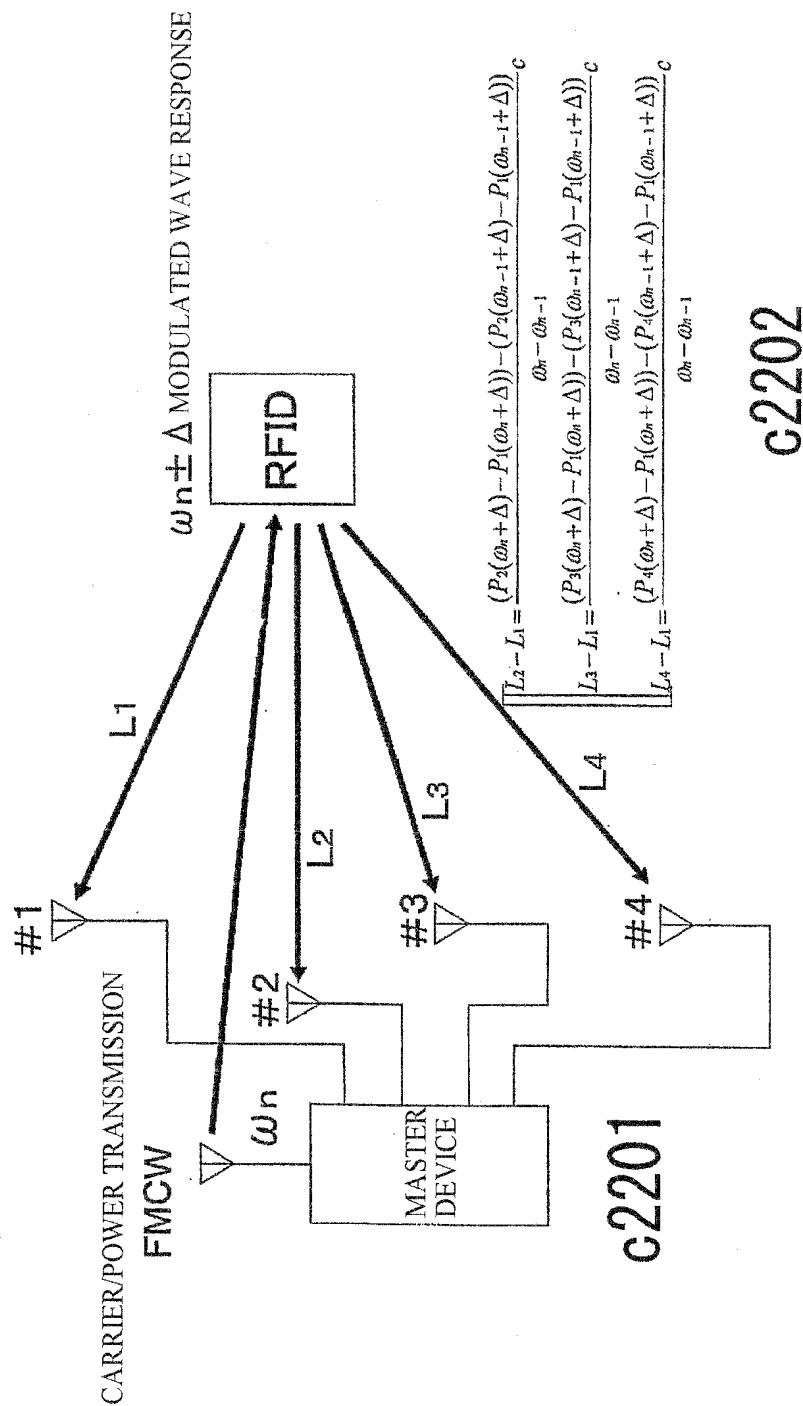


FIG.22



c2201

c2202

FIG.23

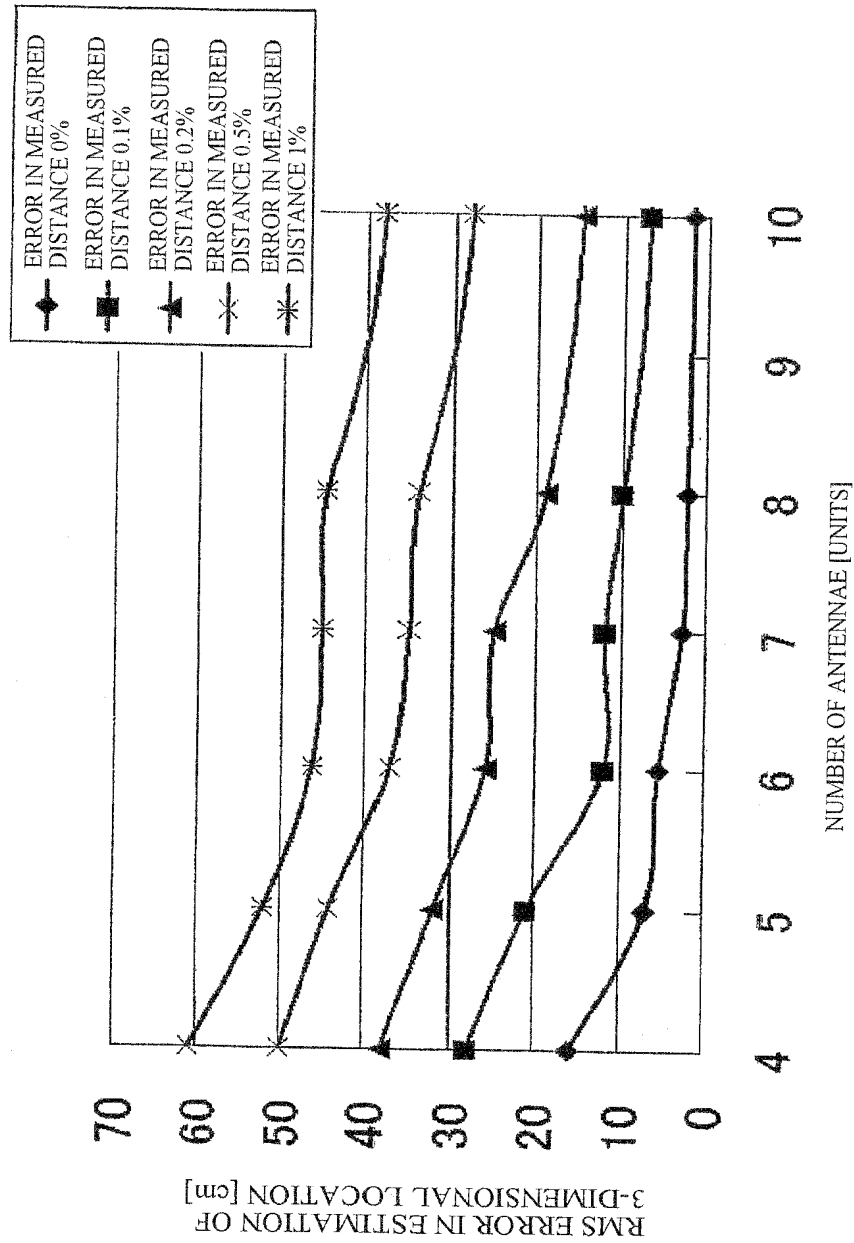


FIG.24

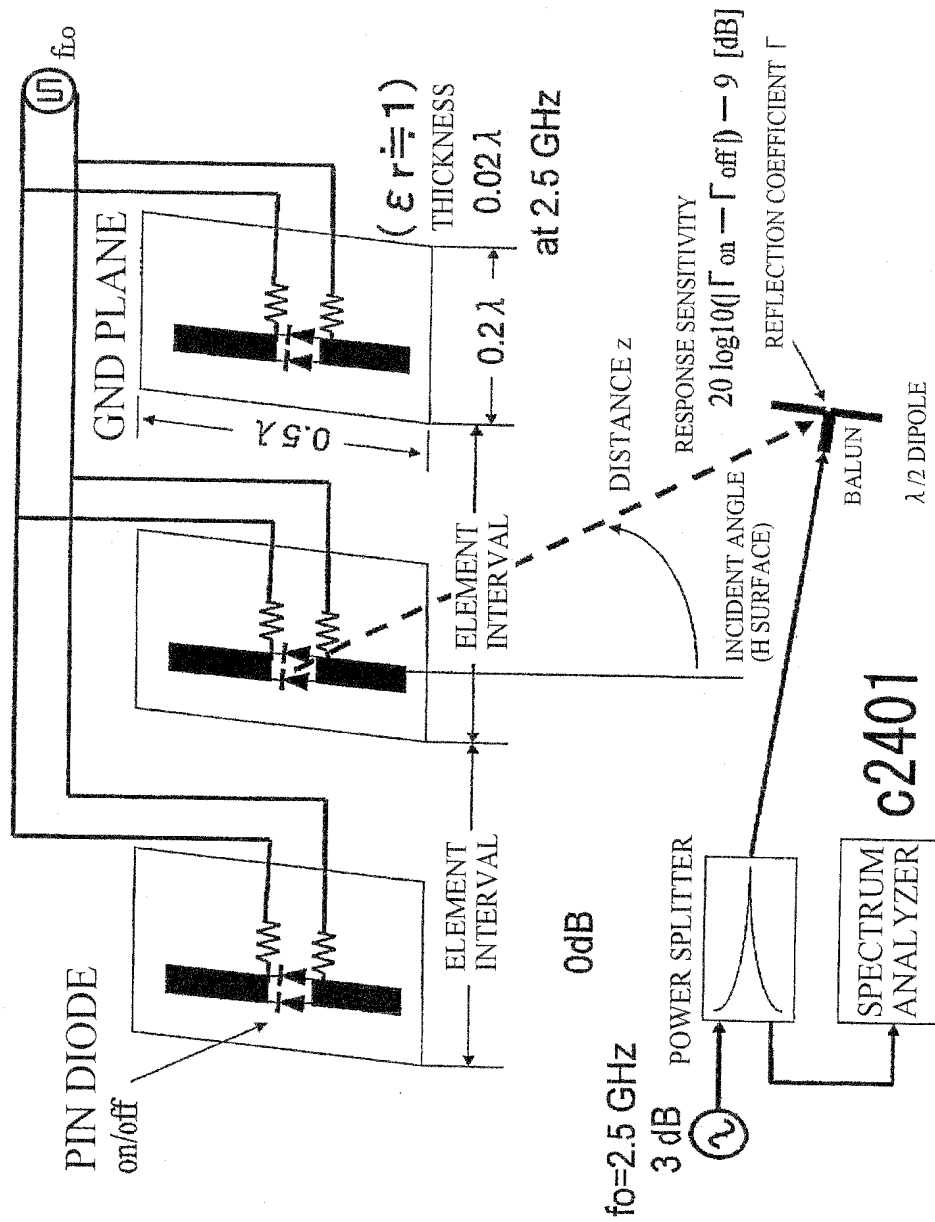


FIG.25

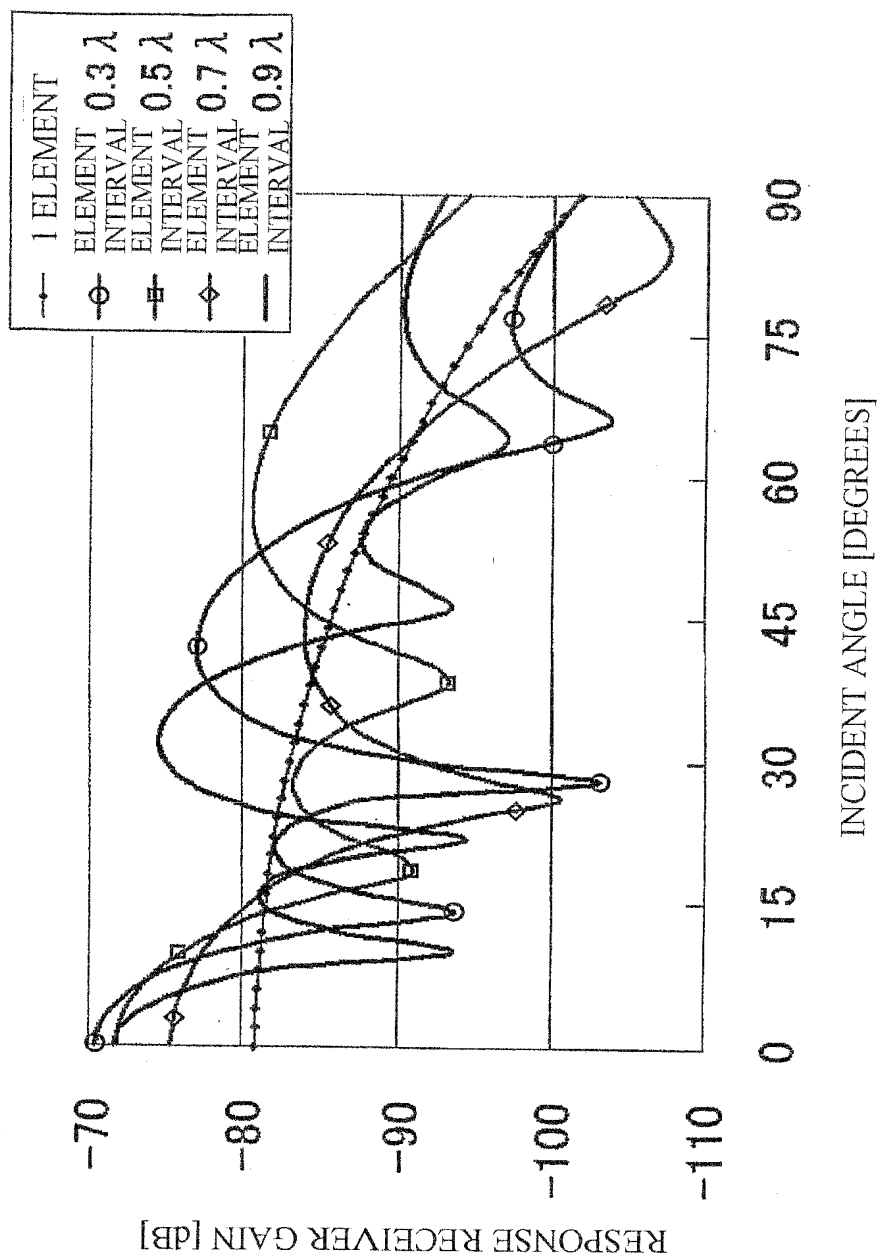


FIG.26

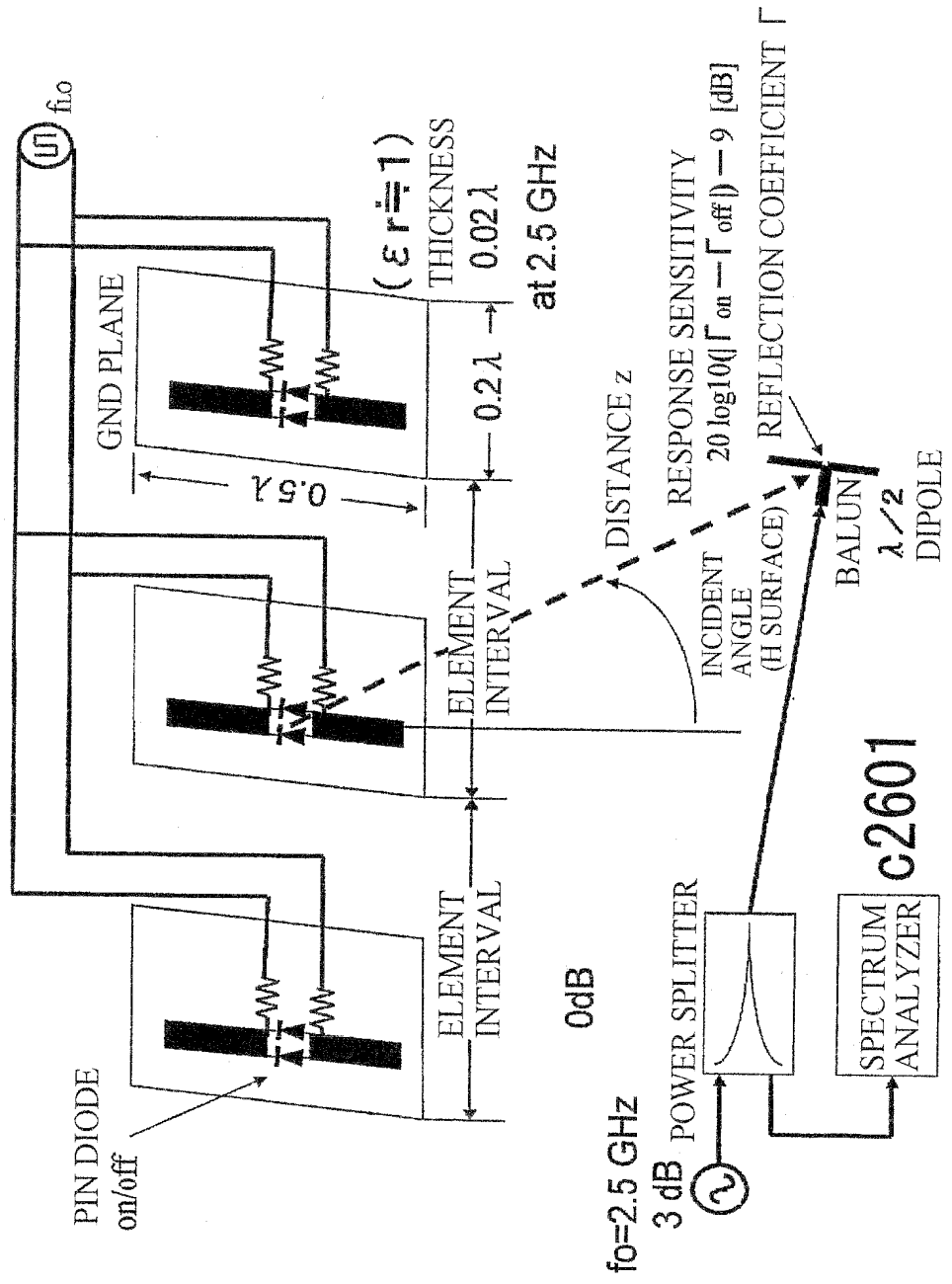




FIG.27

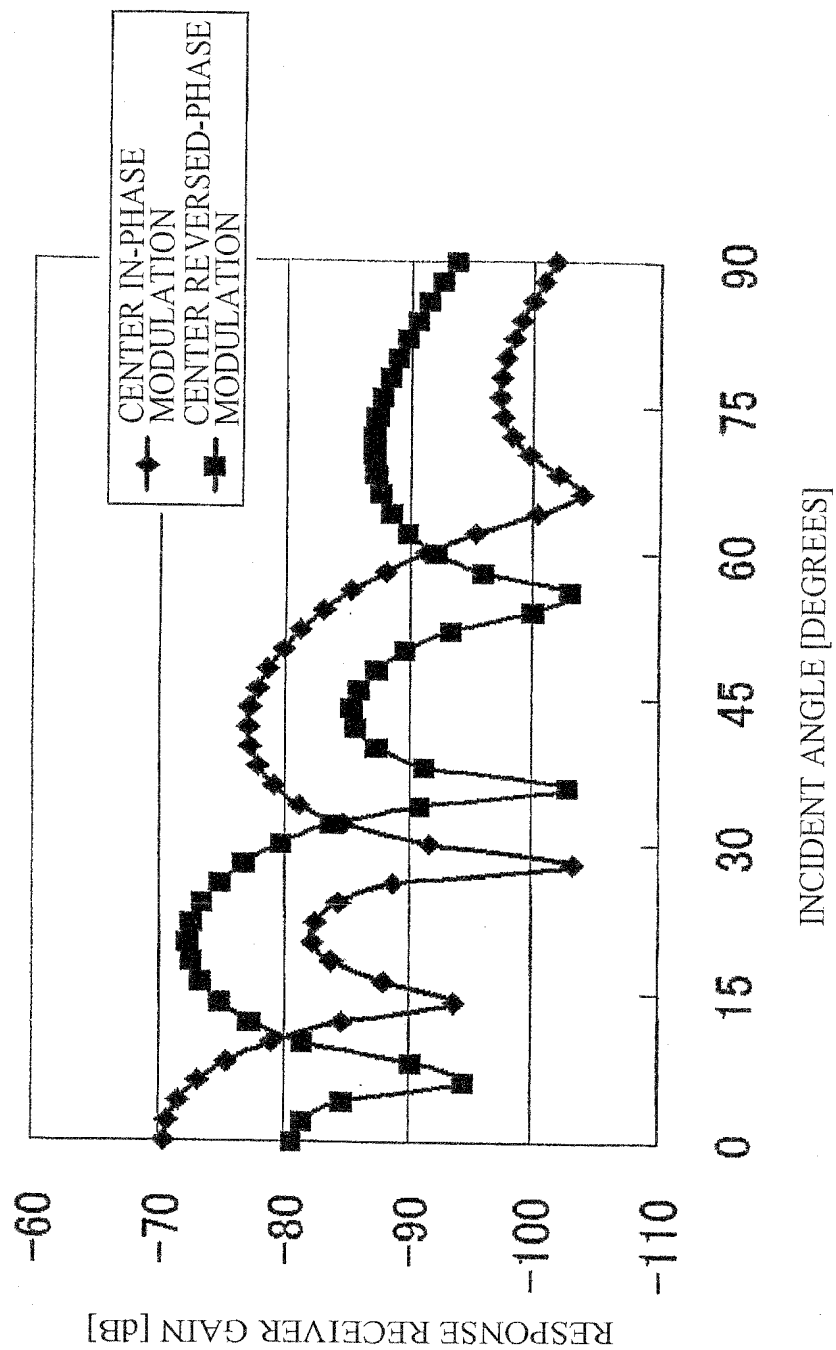


FIG.28

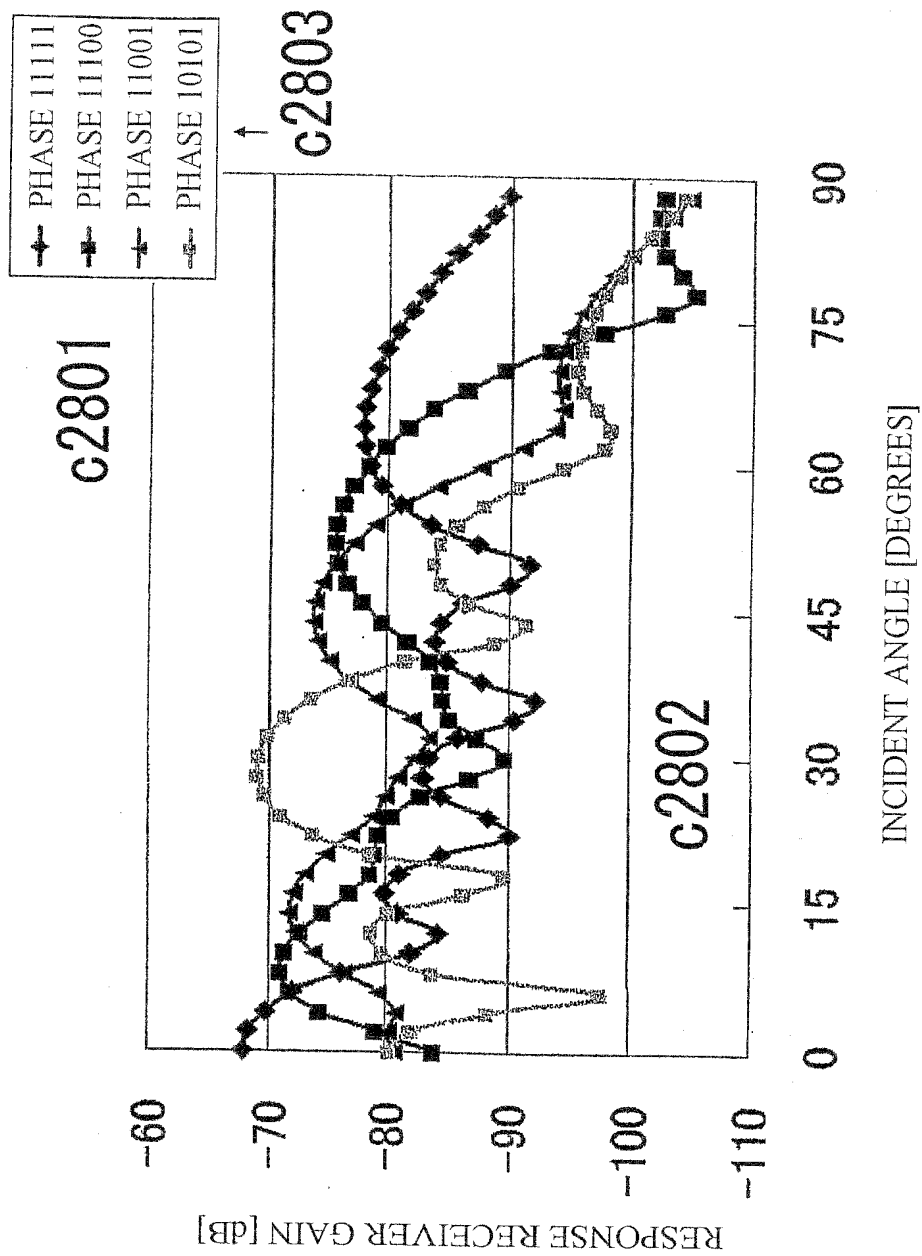


FIG.29

```

real*4 ep(5), x(5), y(5), z(5), xs(5), ys(5), zs(5)
real*4 al(200), bl(200), cl(201)

ij=1234556
f0=0.05
dlh=15.0/f0      ! cm ] (1)
na=16
write(*,10)
format(' Enter the location of x,y,z (cm) : '$) (2)
read(*,*,end=90) xp,yp,zp

call marray(xp,yp,zp,na,cl) (3)
do i=2,na+1
  verr=ran(i,j)
  al(i-1)=cl(i)*(1.0+(verr-0.5)*0.001)-cl(i) ! noise 0.1 % ] (4)
end do
write(*,*) 'ΔL(cm)', (al(i), i=1, na)
write(*,*)

call mcycle(na,dlh,al) (5)

do j=1,5
  ep(i)=1.0e20
end do

do ix=-30,30
  xp=float(ix)*10.0
  do iy=-30,30
    yp=float(iy)*10.0
    do iz=-30,30
      zp=float(iz)*10.0 ] (6)
    end do
  end do
end do

call marray(xp,yp,zp,na,cl) (7)
do i=2,na+1
  bl(i-1)=cl(i)-cl(1)-al(i-1) (8)
end do

call mcycle(na,dlh,bl) (9)
er=0.0
do i=1,na
  er=er+bl(i)**2 (10)
end do
do i=1,5
  if (er .lt. ep(i)) then
    if (i .ne. 5) then
      do j=5, i+1, -1
        ep(j)=ep(j-1)
        x(j)=x(j-1)
        y(j)=y(j-1)
        z(j)=z(j-1)
      end do
    end if
    ep(i)=er
    x(i)=xp
    y(i)=yp
    z(i)=zp
    go to 30 ] (11)
  end if
end do

```

FIG.30

```

      end if
    end do
  continue
end do
end do
do i=1,5
  xs(i)=x(i)
  ys(i)=y(i)
  zs(i)=z(i)
end do

write(*,*) ' RMS error (cm)          x          y          z  (12)
do i=1,5
  write(*,*) sqrt(ep(i)/float(na)), x(i), y(i), z(i)
end do

do m=1,5
  x0=xs(m)
  y0=ys(m)
  z0=zs(m)
do ix=-15,15
  xp=float(ix)+x0
do iy=-15,15
  yp=float(iy)+y0
do iz=-15,15
  zp=float(iz)+z0

  call marray(xp,yp,zp,na,cl)
do i=2,na+1
  bl(i-1)=cl(i)-cl(1)-al(i-1)
end do

  call mcycle(na,d1h,bl)
  er=0.0
do i=1,na
  er=er+bl(i)**2
end do

do i=1,5
  if (er.lt. ep(i)) then
    if (i.ne.5) then
      do j=5,i+1,-1
        ep(j)=ep(j-1)
        x(j)=x(j-1)
        y(j)=y(j-1)
        z(j)=z(j-1)
      end do
    end if
    ep(i)=er
    x(i)=xp
    y(i)=yp
    z(i)=zp
    go to 35
  end if
end do
end do

```




FIG.31

```

        continue
      end do
    end do
  end do

  end do
  write(*,*)
  write(*,*) sqrt(ep(1)/float(na)), x(1), y(1), z(1)  (14)

  write(*,*)
  go to 20

stop
end

subroutine marray(xp, yp, zp, na, cl)
  real*4 cl(1)

  cl(1)=sqrt(xp*xp+yp*yp+(zp+50.0)**2)
  do i=2, na+1
    ixx=i/3
    iyy=1-ixx*3
    xm=float(ixx-1)*50.0-10.0
    ym=float(iyy-1)*50.0+10.0
    cl(i)=sqrt((xp-xm)**2+(yp-ym)**2+zp*zp)
  end do

  return
end

subroutine mcycle(na, dlh, al)
  real*4 al(1)

  do i=1, na
    continue
    if (al(i) .gt. dlh) then
      al(i)=al(i)-dlh
      if (al(i) .le. dlh) go to 46
      go to 40
    end if
    continue
    if (al(i) .lt. -dlh) then
      al(i)=al(i)+dlh
      if (al(i) .ge. -dlh) go to 46
      go to 45
    end if
    continue
  end do

  return
end

```

FIG.32

Enter the location of x,y,z (cm) : 152,-203,56  
 $\Delta L$ (cm) 67.67562 -38.21133 -1.487458 39.09471  
 -69.24731 -27.88023 16.30007 -91.74537 -46.11990  
 0.9732714 -102.0754 -54.30361 -5.570741 -98.28325  
 -51.46763 -3.269386

RMS error (cm)	x	y	z
0.6834297	150.0000	-200.0000	60.00000
0.8562734	150.0000	-190.0000	50.00000
1.116775	150.0000	-200.0000	50.00000
1.163736	160.0000	-230.0000	70.00000
1.216863	160.0000	-220.0000	60.00000
8.4395386E-02	152.0000	-203.0000	56.00000

Enter the location of x,y,z (cm) : 22,123,-89  
 $\Delta L$ (cm) 5.506481 57.46710 16.50204 -17.27929  
 55.74849 14.06553 -20.41722 66.89948 28.19106  
 -2.332703 89.04320 55.22502 29.83902 119.4193  
 90.37129 69.39222

RMS error (cm)	x	y	z
1.445567	20.00000	130.0000	-90.00000
1.754374	20.00000	130.0000	-100.0000
1.951296	20.00000	120.0000	-80.00000
2.345274	20.00000	120.0000	-90.00000
2.709345	20.00000	140.0000	-100.0000
6.2024966E-02	22.00000	123.0000	-89.00000

Enter the location of x,y,z (cm) : 60,161,5  
 $\Delta L$ (cm) -23.45399 32.54938 -13.85323 -57.41031  
 21.66080 -27.96993 -77.36571 22.85288 -26.38201  
 -74.96463 36.05470 -9.367880 -51.50449 59.00156  
 18.86572 -15.62937

RMS error (cm)	x	y	z
1.358104	60.00000	160.0000	10.00000
1.400364	60.00000	160.0000	0.0000000E+00
1.561480	60.00000	170.0000	0.0000000E+00
1.779230	60.00000	170.0000	10.00000
1.850774	60.00000	150.0000	10.00000
4.4650473E-02	60.00000	161.0000	5.000000

Enter the location of x,y,z (cm)